

AMENDMENTS TO THE SPECIFICATION



Please amend paragraph [0080] as follows:

[0080] The above and other objects, features and advantages of the present invention will become more apparent from the following detailed description of the preferred embodiments thereof made with reference to the attached drawings, in which:

FIG. 1(a) is a cross-sectional view of a conventional PEPSM;

FIG. 1(b) is a graph of an electromagnetic field of exposure light ~~directed onto~~ on the conventional PEPSM;

FIG. 1(c) is a graph of an electromagnetic field on a wafer exposed to light directed through the conventional PESM;

FIG. 1(d) is a graph of the intensity of the exposure light on the wafer;

FIG. 2 is a cross-sectional view of another type of a conventional PEPSM;

FIG. 3(A) is a cross-sectional view of a PEPSM according to the present invention;

FIG. 3(B) is a graph of optical characteristics of the PEPSM according to the present invention;

FIG. 4 is a graph showing the line width of a photoresist pattern with respect to the line width of an auxiliary pattern of the PEPSM according to the present invention;

and

FIGS. 5A through 5C are cross-sectional views of the PEPSM during its manufacture and thus collectively illustrate a method of fabricating the PEPSM according to the present invention.

Please amended paragraph [0090] as follows:

[0090] Referring first to FIG. 3A, a PEPSM 100 of the present invention includes a quartz substrate ~~400~~ 105 having a trench 100. The trench 110 has such a depth as to shift the phase of incident light by 180°. Thus, a region where the trench 110 is formed is a 180° phase shift region (hereinafter, “180° region”), while the region of the quartz substrate ~~400~~ 105 where the trench 110 is not formed is a 0° region. An auxiliary pattern is formed at predetermined portions of the 0° region and 180° region. The auxiliary pattern 120 may be formed on a planar surface as spaced laterally from the edge of the trench 110, for example, at the center of the 0° region and/or at the center of the bottom of the trench 110. The auxiliary pattern 120 may be formed of an optical interference material or an opaque material of, for example, chromium. Here, the line width and exposure conditions should be designed for so that the patterning of the photoresist will not occur at a region corresponding to the auxiliary pattern 120. In the present embodiment, the auxiliary pattern 120 is set to have a line width of 30 nm to 200 nm, for example.

Please amend paragraph [0110] as follows:

[0110] Referring to FIG. 5A, a quartz substrate ~~400~~ 105 is prepared as follows. A shield layer (not shown) is formed on a quartz plate such that a predetermined portion of the quartz plate is exposed. The exposed portion of the quartz plate is anisotropically etched to a predetermined depth to form a trench 110 therein. The

depth of the trench 110 is designed for-se as to shift the phase of light by 180° during an exposure process in which exposure light of a given wavelength is directed through the mask. The shield layer is then removed by a known method.

Please amend paragraph [0115] as follows:

[0115] Referring to FIG. 5B, an opaque material, such as chromium, is formed to a predetermined thickness on the surface of the quartz substrate ~~400~~ 105 in which the trench 110 has been formed. The resulting chromium layer 115 is thick enough to fill the trench 110.

Please amend paragraph [0120] as follows:

[0120] Next, as shown in FIG. 50, the chromium layer 115 is etched to form an auxiliary pattern 120 at the center of the quartz substrate ~~400~~ 105 (where no trench is formed) and/or at the center of the surface defining the bottom of the trench 110. The margin for the alignment process is relatively great because the sidewall of the auxiliary pattern 120 is not required to coincide with that of the trench 110. In addition, the auxiliary pattern 120 is not likely to be damaged because the auxiliary pattern 120 is formed at a stable planar surface, i.e., at the center of the top surface of the quartz substrate or at the center of the surface defining the bottom of the trench.

Please amend paragraph [0125] as follows:

[0125] According to the present invention as described above, a PEPSM having a trench comprises an auxiliary pattern having a predetermined line width at the center of the bottom of the trench and/or at the center-of a quartz substrate. The auxiliary pattern adjusts the intensity of incident light, thereby affecting the line width of a photoresist pattern. Therefore, photoresist patterns having a variety of pitches arid

sizes can be fabricated by using auxiliary patterns having different line widths. Furthermore, not only can the auxiliary pattern be fabricated using a simple alignment and manufacturing process, but also the risk of the auxiliary pattern becoming ~~damage~~ damaged is small because the ~~risks~~ auxiliary pattern is formed on a stable planar surface.

Please amend paragraph [0130] as follows:

[0130] Finally, although[[,]] the present Invention has been particularly shown and described with respect to the preferred embodiments thereof, it will be understood by those of ordinary skill in the art that various changes in form and details may be made thereto without departing from the true spirit and scope of the present invention as defined by the following claims.